UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R036XB116NM

Site Name: Shallow

Precipitation or Climate Zone: 10 to 16 inches

Phase:

PHYSIOGRAPHIC FEATURES

Narrative:

This site occurs on gently sloping to undulating terrain. Slopes vary from 1 to 15 percent. Elevations range from 6,000 to 7,300 feet above sea level.

Land Form:

1. Plain
2.
3.

Aspect:

1. N/A
2.
3.

	Minimum	Maximum
Elevation (feet)	6,000	7,300
Slope (percent)	1	15
Water Table Depth (inches)	N/A	N/A

Flooding:	**Minimum**	**Maximum**
Frequency	N/A	N/A
Duration	N/A	N/A

Ponding:	**Minimum**	**Maximum**
Depth (inches)	N/A	N/A
Frequency	N/A	N/A
Duration	N/A	N/A

Runoff Class:

Low to very high.

CLIMATIC FEATURES

Narrative:

Average annual precipitation varies from about 10 inches to just over 16 inches. Fluctuations ranging from about 5 inches to 25 inches are not uncommon. The overall climate is characterized by cold dry winters in which winter moisture is less than summer. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than are those of spring.

The average frost-free season is about 120 days and extends from approximately mid May too early or mid September. Average annual air temperatures are to degrees F or lower and summer maximums rarely exceed 100 degrees F. Winter minimums typically approach or go below zero. Monthly mean temperatures exceed 70 degrees F for the period of July and August.

Rainfall patterns generally favor warm-season perennial vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on a given ecological site, which is quite susceptible to disturbance and is at or near its productive potential only when both the natural warm/cool-season dominants are present.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

	Minimum	Maximum
Frost-free period (days):	102	148
Freeze-free period (days):	119	174
Mean annual precipitation (inches):	10	16

Monthly moisture (inches) and temperature (^{0}F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.40	.91	12.9	47.0
February	.43	.65	16.6	51.2
March	.47	1.10	20.9	57.1
April	.30	.49	26.1	65.3
May	.46	.98	33.4	74.2
June	.51	.57	41.4	84.2
July	2.15	3.45	50.4	85.1
August	2.28	3.03	48.7	82.4
September	1.29	1.68	41.4	77.9
October	.81	1.12	29.4	69.2
November	.38	.71	19.1	57.3
December	.53	.95	13.1	48.9

Climate Stations:

				Period		
Station ID	290640	Location	Augustine 2E, NM	From: 05/01/26	To:	07/31/00
Station ID	296812	Location	Pietown 19NE, NM	From: 09/01/88	To:	07/31/00
Station ID	297180	Location	Quemado, NM	From: 08/01/15	To:	07/31/00

INFLUENCING WATER FEATURES

Narrative:

This site is not influenced by water from a wetland or stream.

Wetland description:

System	Subsystem	Class
N/A		

If Riverine Wetland System enter Rosgen Stream Type:
N/A

REPRESENTATIVE SOIL FEATURES

Narrative:

Surface textures are typically medium and the soils are usually gravelly, cobbly, or stony throughout the profile. They are shallow to very shallow over an indurate layer such as caliche or unweathered limestone bedrock. Permeability is moderate to rapid, but the available water-holding capacity is usually low.

Parent Material Kind: Alluvium
Parent Material Origin: Mixed

Surface Texture:

1. Loam
2. Gravelly loam
3. Fine sandy loam 4. Clay loam 5. Very gravelly sandy loam 6. Very gravelly loam

Surface Texture Modifier:

1. Gravel
2. Cobble
3.

Subsurface Texture Group: Clay loam
Surface Fragments <=3" (% Cover): 35 to 60
Surface Fragments >3" (% Cover): 15 to 35

Subsurface Fragments <=3" (%Volume): 15 to 35
Subsurface Fragments >=3" (%Volume): 35 to 60

	Minimum	**Maximum**
Drainage Class:	Well	Somewhat excessively
Permeability Class:	Very Slow	Moderately rapid
Depth (inches):	5	20
Electrical Conductivity (mmhos/cm):	0.00	4.00
Sodium Absorption Ratio:	0.00	13.00
Soil Reaction (1:1 Water):	6.6	9.0
Soil Reaction (0.1M CaCl2):	N/A	N/A
Available Water Capacity (inches):	3	6
Calcium Carbonate Equivalent (percent):	N/A	N/A

PLANT COMMUNITIES

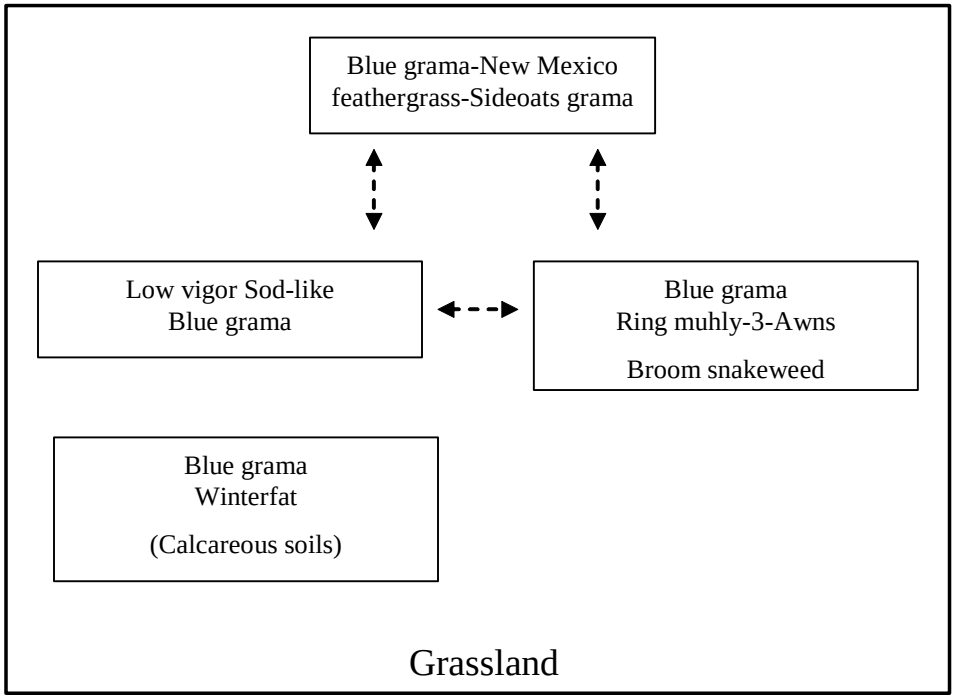
Ecological Dynamics of the Site

Overview

This site occurs on benches, hills, ridges and dipslopes of cuestas. The soils are shallow over a petrocalcic horizon (caliche), limestone, or shale. Loamy and Savannah sites often occur as areas of deeper soils interspersed or adjacent to the Shallow site. This is a grassland site characterized by a mixture of warm and cool-season grasses, scattered shrubs, and a few trees. Blue grama, New Mexico feathergrass and sideoats grama are the dominant grasses. Winterfat and Bigelow sagebrush are characteristic shrubs. Juniper and piñon are the tree species that occur on this site. This site appears to be highly resistant to state change, as no alternate states were identified during our inventory. This may be due in part to the petrocalcic horizon[1] or bedrock that helps to keep water perched and available, favoring shallow rooted grasses.

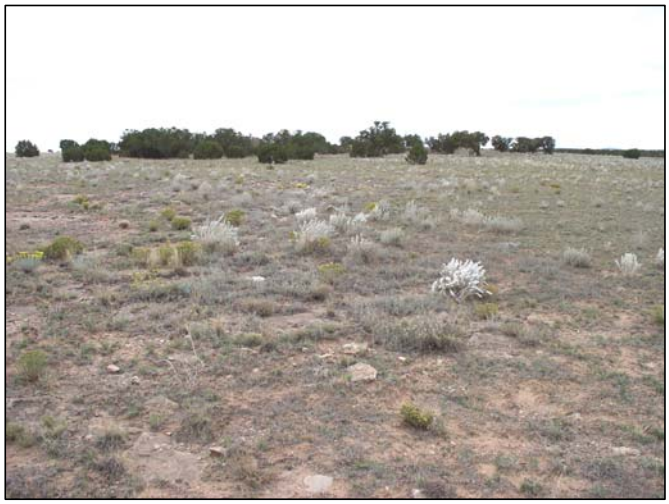
Plant Communities and Transitional Pathways (diagram)

MLRA 36, WP-2 Shallow



MLRA 36; WP-2; Shallow

Grassland



•Dominated by blue grama with patches of New Mexico feathergrass, black grama, and ring muhly.
•Trees and shrubs are juniper, winterfat, Bigelow sagebrush, and some broom snakeweed
•Grass cover fairly uniform with few bare areas.
•High amount of rock cover.
•Winona gravelly loam, Cibola Co., NM.

Dominant grass
Blue Grama

Patch of New Mexico Feathergrass protected by rock cover

Patch of
Black grama

•Blue grama-winterfat community with some black grama, New Mexico feathergrass, and Bigelow sage
•Winona gravelly loam, Cibola Co., NM.

Plant Community Name: Historic Climax Plant Community

Plant Community Sequence Number: 1 **Narrative Label**: HCPC

Plant Community Narrative: State Containing Historic Climax Plant Community ***Grassland:***. Blue grama, New Mexico feathergrass, and sideoats grama are the dominant grasses. Other characteristic species include needle and thread, black grama, Indian ricegrass, western wheatgrass, little bluestem, galleta, bottlebrush squirreltail, sand dropseed, and spike muhly. Shrubs characteristic of this site are winterfat, Bigelow sagebrush, and broom snakeweed. One seed juniper is often the most common tree at lower to mid elevations, with piñon increasing on those sites that occur at higher elevations. Winterfat may naturally occur at increased densities on highly calcareous soils; [3] the increase in winterfat may result in a blue grama/winterfat community. Changes in composition to the historic plant community may occur in response to continuous heavy grazing. This is typified by a decrease in cool-season grasses such as New Mexico feathergrass, followed by a decrease in the more palatable warm-season grasses. A less productive sod-like blue grama dominated community may result. Broom snakeweed may increase in response to overgrazing, or as a result of late fall/early spring moisture following drought.[2] This increase in snakeweed may result in a blue grama/snakeweed community.

Diagnosis: Grasses are dominant and cover is fairly uniform with few large bare areas present. Shrubs and a few trees are present on the site with a combined canopy cover averaging seven percent. Evidence of erosion such as pedestalling of grasses, rills and gullies is infrequent.

Canopy Cover:	
Trees	7 %
Shrubs and half shrubs	7 %
Ground Cover (Average Percent of Surface Area).	
Grasses & Forbs	18
Bare ground	30
Surface gravel	35
Surface cobble and stone	5
Litter (percent)	12
Litter (average depth in cm.)	1

Plant Community Annual Production (by plant type):

Annual Production (lbs/ac)

Plant Type	Low	RV	High
Grass/Grasslike	255	489	723
Forb	21	40	59
Tree/Shrub/Vine	24	46	68
Lichen			
Moss			
Microbiotic Crusts			
Total	300	575	850

Plant Community Composition and Group Annual Production:

Plant Type - Grass/Grasslike

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
1	BOGR2	Blue Grama	86 – 115	86 – 115
2	HENE2 HECO26	New Mexico Feathergrass Needleandthread	58 – 115	58 – 115
3	BOCU	Sideoats Grama	58 – 115	58 – 115
4	BOHI2	Hairy Grama	6 – 17	6 – 17
5	SCSC	Little Bluestem	29 – 58	29 – 58
6	LYPH MUWR	Wolftail Spike Muhly	29 – 58	29 – 58
7	ELEL5 PASM ACHY	Bottlebrush Squirreltail Western Wheatgrass Indian Ricegrass	29 – 58	29 – 58
8	PLJA	Galleta	6 – 29	6 – 29
9	SPCR	Sand Dropseed	6 – 29	6 – 29
10	BOER4	Black Grama	6 – 17	6 – 17
11	MUTO2 ARIST	Ring Muhly Threeawn spp.	6 – 29	6 - 29

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
12	2FP	Other Perennial Forbs	6 – 29	6 – 29
13	2FA	Other Annual Forbs	6 – 17	6 - 17

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
14	PIED JUNIP	Pinyon Pine Juniper spp.	6 – 29	6 – 29
15	QUERC RHTR LYPA	Oak spp. Skunkbush Sumac Pale Wolfberry	6 – 17	6 – 17
16	ARBI3 KRLA2 GUSA2	Bigelow Sagebrush Winterfat Broom Snakeweed	6 – 29	6 - 29

Plant Type - Lichen

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Moss

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Microbiotic Crusts

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Growth Curves

Growth Curve ID **0307NM**

Growth Curve Name: **HCPC**

Growth Curve Description: **Mixed warm/cool-season grassland w/shrubs and half-shrubs and forb components.**

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	5	7	10	15	25	25	8	5	0	0

Additional States: None identified at this time.

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

Habitat for Wildlife:

This ecological site provides habitats which support a resident animal community that is characterized by pronghorn antelope, coyote, black-tailed jackrabbit, Merriam's kangaroo rat, white-throated woodrat, silky pocket mouse, sparrow hawk, Cassin's kingbird, chipping sparrow, plateau whiptail, short-horned lizard and prairie rattlesnake.

Where pinyon pine and juniper increase under conditions of site retrogression, mule deer, gray fox, pinyon mouse, and scrub jay utilize the site. Mourning dove and black-chinned sparrow use it to nest. The chestnut-collared longspur winters here and the common raven and prairie falcon hunt over this site.

Hydrology Functions:

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations

Soil Series	Hydrologic Group
Lavodnas	C
Menefee	D
Persayo	D
Sandoval	D
Shadilto	D
Winona	D

Recreational Uses:

This site offers fair to good potential for hiking, horseback riding, nature observation, photography, camping, and picnicking. It offers good potential for pronghorn antelope hunting, and poor to fair opportunities for hunting mule deer.

A generally open landscape, dotted by shrubs and half-shrubs, provides natural beauty on this site.

Wood Products:

This site at its potential has little or no significant value for wood products.

Other Products:

Grazing:

This site is suitable for grazing by most kinds and classes of livestock in all seasons of the year, but is poorly suited for continuous yearlong use if the natural potential vegetation is to be maintained. Occasional spring or fall deferment is especially critical for continued production of such grasses as New Mexico feathergrass and needleandthread. Summer rest is important if the production of sideoats grama and blue grama is to be sustained. Heavy prolonged use on a continuous basis will most likely result in a rapid decrease in cool-season grasses and a more gradual but eventually just as certain decrease in sideoats grama, winterfat, little bluestem, spike muhly, and blue grama. Advanced site deterioration may be typified by an increase of such plants as broom snakeweed, ring muhly, and threeawn spp. The site is also subject to invasion by woody plants such as rabbitbrush.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	**Ac/AUM**
100 - 76	3.6 – 4.7
75 – 51	4.5 – 6.7
50 – 26	6.5 – 11.5
25 – 0	11.5+

Plant Part	Code	Species Preference	Code
Stems	**S**	**None Selected**	**NS**
Leaves	**L**	**Preferred**	**P**
Flowers	**F**	**Desirable**	**D**
Fruits/Seeds	**F/S**	**Undesirable**	**U**
Entire Plant	**EP**	**Not Consumed**	**NC**
Underground Parts	**UP**	**Emergency**	**E**
		Toxic	**T**

Plant Preference by Animal Kind:

Animal Kind: Livestock
Animal Type: Cattle

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Blue Grama	Bouteloua gracilis	EP	D	D	D	D	P	P	P	P	P	D	D	D
New Mexico Feathergrass	Hesperostipa neomexicana	EP	D	D	P	P	P	D	D	D	D	D	D	D
Needleandthread	Hesperostipa comata	EP	D	D	P	P	P	D	D	D	D	D	D	D
Little Bluestem	Schizachyrium scoparium	EP	D	D	D	P	P	P	P	D	D	D	D	D
Spike Muhly	Muhlenbergia wrightii	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Bottlebrush Squirreltail	Elymus elymoides	EP	U	U	D	D	D	U	U	U	D	D	D	U
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D
Black Grama	Bouteloua eriopoda	EP	P	P	P	D	D	D	D	D	D	D	P	P
Indian Ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	P	P	P	P	P	P	P
Winterfat	Krascheninnikovia lanata	EP	D	D	P	P	P	P	P	P	D	D	D	D
Some Perennial Forbs	Various	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S

Animal Kind: Livestock
Animal Type: Sheep

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Most Perennial Forbs	Various	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Indian Ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	D	D	D	D	D	D	P
Winterfat	Krascheninnikovia lanata	EP	P	P	P	P	P	P	P	P	P	P	P	P
Western Wheatgrass	Pascopyrum smithii	EP	U	U	D	D	D	D	D	D	D	D	D	U
Bottlebrush Squirreltail	Elymus elymoides	EP	U	U	D	D	D	U	U	U	U	U	U	U
Bigelow Sagebrush	Artemisia bigelovii	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Some Annual Forbs	Various	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Wolftail	Lycurus phleoides	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Black Grama	Bouteloua eriopoda	EP	P	P	P	D	D	D	D	D	D	D	P	P
New Mexico Feathergrass	Hesperostipa neomexicana	EP	D	D	P	P	P	D	D	D	D	D	D	D

Animal Kind: Wildlife
Animal Type: Antelope

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Most Perennial Forbs	Various	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Indian Ricegrass	Achnatherum hymenoides	EP	U	U	P	P	P	U	U	U	D	D	D	U
Winterfat	Krascheninnikovia lanata	EP	D	D	D	D	D	D	D	D	D	D	D	D
Western Wheatgrass	Pascopyrum smithii	EP	U	U	D	D	D	U	U	U	U	U	U	U
Bottlebrush Squirreltail	Elymus elymoides	EP	U	U	P	P	P	U	U	U	D	D	D	U
Bigelow Sagebrush	Artemisia bigelovii	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Some Annual Forbs	Various	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S

Animal Kind: Wildlife
Animal Type: Deer

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Some Forbs	Various	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Oak spp.	Quercus spp.	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Winterfat	Krascheninnikovia lanata	EP	D	D	D	D	D	D	D	D	D	D	D	D
Bigelow Sagebrush	Artemisia bigelovii	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S

SUPPORTING INFORMATION

Associated sites:

Site Name	Site ID	Site Narrative

Similar sites:

Site Name	Site ID	Site Narrative

State Correlation:

This site has been correlated with the following sites: _____

Inventory Data References:

Data Source	# of Records	Sample Period	State	County

Type Locality:

State: **New Mexico**

County: **Catron, Socorro**

Latitude: _____

Longitude: _____

Township: _____

Range: _____

Section: _____

Is the type locality sensitive? **Yes** ☐ **No** ☐

General Legal Description: _____

Relationship to Other Established Classifications:

Other References:

Data collection for this site was done in conjunction with the progressive soil surveys within the New Mexico and Arizona Plateaus and Mesas 36 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: McKinley, Socorro, Cibola, Sandoval Catron.

1. Hennessy, J.T., R.P. Gibbens, J.M. Tromble, and M. Cardenas. 1983. Water properties of caliche. J. Range Manage. 36: 723-726.

2. McDaniel, K. C., L. A. Torell, and J.W. Bain. 1993. Overstory-understory relationships for broom snakeweed-blue grama grasslands. Journal of Range Management. 46: 506-511.

3. Stubbendieck, J., S. L.Hatch, and C. H. Butterfield, 1992. North American range plants. 4th ed. Lincoln, NE: University of Nebraska Press. 493 p.

Characteristic Soils Are:	
Lavodnas	Menefee
Persayo	Sandoval
Shadilto	Winona
Other Soils included are:	

Site Description Approval:

Author	**Date**	**Approval**	**Date**
Don Sylvester	02/15/80	Durwood E. Ball	03/27/80

Site Description Revision:	**Date**	**Approval**	**Date**
David Trujillo	12/16/04	George Chavez	03/03/05